

THE RIGHT TEMPORAL LOBE AND ASSOCIATED LIMBIC LOBE STRUCTURES AS THE BIOLOGICAL INTERFACE WITH AN INTERCONNECTED UNIVERSE

*Melvin Morse M.D.,
Associate Professor of Pediatrics
Seattle, USA*

Abstract:

Deep right temporal lobe and associated limbic lobe structures are clearly linked to human religious experiences of all types, including conversion experiences and near death experiences. Simply because religious experiences are brain based does not automatically lessen or demean their spiritual significance. Indeed, the findings of neurological substrates to religious experiences can be argued to provide evidence for their objective reality.

I speculate that our right temporal lobe allows humans to interact with a timeless space-less "non-local" reality. The clinical experience of accessing that reality is an important component in religious experiences. The existence of such a reality is predicted by modern quantum theoretical physics.

Such a theory has value in that it provides a theoretical explanation for many well documented phenomena which currently exist outside our current theoretical scientific model. I will review its implications for a better understanding of two of them, remote viewing and mind-body healing. This theory results in potential scientific studies that can advance our understanding of human consciousness and paranormal talents.

Introduction

All human experience is brain based. This includes scientific reasoning, mathematical deduction, moral judgement and athletic talents.(Saver 1997) A neurobiological basis for paranormal abilities and encounters with spiritual realities results a new hypothesis which can be experimentally tested.. As yet, there is no coherent theory to explain how precognition or remote viewing could work from a brain biology point of view. This lack of a theoretical scientific model to allow interaction with an interconnected universe has led to a 100 year 'skeptic' versus 'believer' debate which has not advanced our understanding of human consciousness. This debate is primarily a philosophical one, between atheists and 'believers' . It has dominated all areas of paranormal and near-death research, and often is couched in scientific terminology.(Hansen 1992) The debate itself, by both CSICOPs and 'believers' fulfils Carl Sagan's definition of

pseudoscience, in that there is little scientific data generated and many appeals to various authorities as experts.(Sagan 1996)

The Biological Basis of Religious Experiences, Out of Body Experiences and Near Death Experiences

The mesial right temporal lobe, hippocampus and associated limbic lobe structures are implicated as the biological substrates of out of body and religious experiences. The evidence for this includes studies of temporal lobe pathology, direct electrical stimulation studies, studies of temporal lobe epileptics, experimental studies of near death experiences (NDEs), and clinical studies comparing ketamine and LSD experiences and the actions of associated neurotransmitters within the human brain.

Early case reports demonstrated that tumours in the temporal regions were often associated with visual hallucinations. These hallucinations included visions of 'a strange looking wicked looking woman in a dress', to 'pictured scenes and mirages', to flashes of light and luminous objects (Henschen 1925, Jackson 1889-90). For example, one report of a boy with a cystic glioma in the right temporal lobe resulted in a vivid three dimensional vision of a man dressed in white.(Cushing 1921). Kennedy was one of the first to identify vividly real hallucinations of an audio-visual nature, localized outside of the body as being temporal lobe in origin (Kennedy 1911). Many of the case reports involved seeing apparitions before death. This is a well documented clinical phenomenon seen in dying patients (Barrett 1990, Osiris 1977).

Direct electrical stimulation studies of deep right temporal lobe structures broaden our understanding of this area, as they involve out of body perceptions as well as 'seeing' memories, and other elements of NDEs (Moody). For example, in Penfield's series, one patient stated 'oh God, I am leaving my body', and another patient stated 'I am half in and half out'. In nearby areas in the temporal lobe, patients reported hearing heavenly music, seeing vivid hallucinations of people, and recalling past memories so vividly that they seemed to be as if a three dimensional panorama outside of the body (Penfield 1950,1955).

A more recent study describes a patient who reported a feeling of being far away from his body on right temporal mesolimbic structure stimulation (Gloor). Michael Persinger has developed a method of weak electrical stimulation of the right temporal lobe without neurosurgical intervention, which he used to study college students. He describes them as having a 'God experience' (Persinger 1987).

Temporal epileptics describe having seizures which involve religious elements, including the sort of dramatic transformations described after near death experiences (Morse 1992). I reported on a 12 year old girl who described leaving her physical body,

travelling down a tunnel to a place she felt was heaven; not after nearly dying, but in the context of EEG findings consistent with right temporal epilepsy (Morse 1994). In one series, 88% of patients who saw themselves from a vantage point of being outside the body, or seeing one's one body externalized in space had a temporal lobe focus (Devinsky 1989). Many of the experiences in temporal lobe epileptics involve phenomena such as déjà vu, jamais vu, memory recall, and visual and auditory hallucinations (Palmini 1992, So 1993). Feelings of religious ecstasy (Williams 1956) and double consciousness, meaning the simultaneous experience of one's ordinary consciousness and the perception of another reality are again linked to right temporal lobe epilepsy (Mendez 1996). Religious conversion is also involved (Dewhurst 1970). Finally, Morgan (1990) makes a direct correlation between the religious ecstasies reported in the works of Dostoyevsky and seizures caused by a right temporal lobe astrocytoma. The latter involved feelings of detachment, ineffable contentment, visualizing a bright light recognized as the source of all knowledge, and seeing 'Jesus Christ'.

Similarities between published accounts of near death experiences and LSD and ketamine induced hallucinations provide further support for this theory. We applied Greyson's near death experience validity scale to published accounts of LSD experiences, and found that they scored as having NDEs. We developed a model of NDEs based on serotonergic mechanisms, localized within the right temporal lobe (Morse 1989).

Jansen has proposed a model based on similarities in ketamine experiences and NDEs. His model theorizes a neuroprotective benefit from the experiences in that the end neurotransmitter L-glutamate may be both neuroprotective and an endopsychosin. This model gives an evolutionary reason for the development of the experiences as they may protect the brain against hypoxia as well as giving an expanded sense of awareness and detachment helpful in life threatening situations (Jansen K 1996). Ketamine also acts in the mesiotemporal lobes and associated limbic lobe structures (Morse 1989).

The Temporal Lobe as Link to Non-Local Reality

In the aforementioned studies, virtually all of the authors describe right temporal lobe experiences as 'hallucinations'. Dorland defines a 'hallucination' as 'a sense perception not based in objective reality'. However, those who describe near death experiences, as well as ketamine induced visions state that the experiences are real, and involve the perception of a 'real' God (Morse 1990, Jansen, personal communication).

Furthermore, it is clear from both clinical and experimental evidence that near death experiences are in fact the dying experience and are not artifacts of resuscitative efforts,

hypoxia, treatment with drugs such as morphine, or hypercarbia (Morse 1986, 1991; Whinnery 1990) We now have an experimental method of inducing near death experiences, the high speed centrifuge used to study the effects of increased gravity on fighter pilots. They have 'dreamlets' similar to near death experiences, at the point when blood flow theoretically is stopping in their temporal lobes (Jim Whinnery, personal communication 1997).

There is reason to believe that there are other realities to perceive. Mathematical physicist Paul Davies points out that there are three generations of leptons and quarks, the fundamental building blocks of the universe. The electron has the corresponding muon and tauon, and there are corresponding quarks with different spins, resulting in 12 basic entities of matter. This reality is based on electrons and up and down quarks, and the other particles only last for a fraction of a second in this universe. It is reasonable to speculate that there are other realities which are muon or tauon based with different quark pairs.(Davies 1992).

Molecular biologist de Duve has concluded that there is a cosmic imperative to develop conscious life.(de Duve 1995) It is respectable to speculate that such a cosmic imperative would exist in other "worlds" as well. This provides a possible solution to the current clinical problem in which healthy non-psychotic persons perceive other realities and beings while in altered states of consciousness (Hufford 1982).

A number of speculative books written by mathematicians and theoretical physicists discussing these issues are numerous, going all the way back to Wolfgang Pauli who teamed up with Carl Jung to develop the concept of the collective unconscious. (Schrodinger 1944, Zukav 1979, Capra 1976, Tiller 1997, Gleick 1987, Peat 1987, Bohm D 1987, Wheeler in Buckley and Peat 1979) All of these books emphasize that theoretical physics contains the concept of a non-local reality, meaning that events can be independently linked even though there are no forces interconnecting them, implying that non-causal events can take place. This implies in turn a pattern of reality not fixed in time and place.

Paul Davies concludes in his book *The Mind of God* : 'We have cracked the cosmic code. We, who are animated stardust, have a glimpse of the rules on which the universe runs. How we have become linked into this cosmic dimension is a mystery. Yet the linkage cannot be denied'.

Michio similarly comments that it is not hard to formulate the mathematical principles underlying 10 dimensions. 'What is hard is to understand is how we can communicate and interact with them'.

There are three ways of understanding how the human brain could have non-local interactions with other realities. Humans could have non-local interactions with other "worlds". They could have non-local interactions in the phenomenal world mediated by the higher (10 or 11) dimensional physical model of reality of which our world is a dimensional reduction. The problem with these two models is that the former involves unknown and currently non-testable mechanisms of interaction. The latter requires energy sources seemingly beyond the ability of the human brain (personal communication Chris Clarke, Southampton University).

I am proposing that our right temporal lobe allows for non-local interactions within the ordinary phenomenal world due to quantum non-locality as evidenced by the Aspect experiment. Tipler (1994) has proposed a timeless-spaceless omega point within conventional 4D space-time. He details a series of experiments that would confirm or invalidate its existence.

Near death experiences and visionary experiences in general may simply be the clinical descriptions of our right temporal lobe accessing information from a timeless space-less non-local reality. These visions often contain precognitive elements such as those documented in parents who have had infants die of Sudden Infant Death Syndrome (Hennsley JA 1993). If there is a reality independent of time, then precognition would be theoretically possible.

Paranormal Becomes Normal Once We Postulate a Biological Link with Non-Local Reality

If we can access a non-local reality, then 'paranormal' abilities could be analyzed as being based on normal right temporal lobe function. For example, remote viewing is well documented in the laboratory and is shown to be independent of time and distance (Dunne 1987, Utts 1996) . If we are able to access non-local reality, remote viewing would not only be possible, but expected to be independent of time and space.

Sheldrake has already proposed a model of 'morphic forms'. These are patterns of energy in nature which correspond to the physical bodies, memories, and behaviours of living organisms. I am adding to this model the speculation that our right temporal lobe is the mediator of morphic resonance, the postulated interaction between our brains and morphic forms. Becker (1985,1990) presents evidence that biological resonance and absorption and even transfer of energy occurs at the specific frequency range at which the hydrogen atom proton is effected by nuclear magnetic resonance. He demonstrates that Chi Gong practitioners can effect the NMR spectrum of certain chemicals. He also makes the intuitive connection that healers may be accessing morphic forms in non-local reality and using that interaction to correct flaws in the body's energy template.

Many of the illnesses which respond best to mind-body interventions such as cancers and autoimmune diseases may be understood as responding to the correction of DNA through morphic resonance, mediated by the right temporal lobe. Kelleher (1998) has described a model through which spiritual events could result in a change in our DNA as evidenced by transpon activity, although he does not mention the right temporal lobe. Remarkable healings from cancer, however, have been anecdotally linked to dissociative events and near death experiences. (Hirshberg 1995) Benson (Hirshberg page 125) states that his studies of meditation by Yoga Masters indicate 'that there is a source of energy within the human body other than ones we are currently aware of'. Again, circumstantial evidence links meditation with right temporal activity. Benson finds a common element in meditation is to try to find a timeless state of consciousness, and suggests that patients use the same sort of imagery seen in spiritual visions. (Benson 1992) Dissociative experiences, previously documented as right temporal lobe in nature, are often the by-products of meditation.

There is some evidence linking paranormal events and right temporal lobe function. Deja vu and premonitions are documented on right temporal lobe stimulation (Mullan 1959). Professional mediums often have anomalous findings on temporal lobe EEGs (Nelson 1970) Several authors have found an increase in subjective paranormal experiences in subjects who also demonstrated 3temporal lobe lability², meaning that they had an increased number of minor symptoms associated with temporal lobe epilepsy, but never had a seizure (Persinger 1993, Neppe VM 1981, Makarec K 1990). Anomalous experiences of all types have been localized to the temporal lobes, by Neppe (1984).

Targ and Katra (1998) have already pointed out similarities between mind-body healing, remote viewing, and postulated interactions with a non-local universe. Both remote viewers and spiritual healers report dissociative experiences as triggering events for their abilities (Targ and Katra, McMoneagle 1993).

There are experiments that could be done to validate or disprove my hypothesis. DNA transpon activity can be measured, and alterations by spiritual events or near death experiences documented. It is also possible that spiritual experiences could cause measurable alterations in the human immune system, similar to those seen in studies of personality profiles (Ader 1991). If a biological marker for dissociative events could be identified, then the presence or absence of that marker could be evaluated in a variety of situations including spiritual healings, remote viewing studies, and electrical stimulated induction of spiritual experiences.

Hameroff has proposed that protein microtubules within nervous system cells mediate energy interactions between the brain and non-local reality.(Hameroff 1997, 1998) The

presence of these microtubules could be looked for within the right temporal lobe. Presence or absence of these proteins could also be correlated with the aforementioned clinical situations.

Clinical studies could be done of paranormal abilities such as remote viewing after right temporal lobe stimulation. There is some evidence that electromagnetic field activity can alter paranormal abilities (Haraldsson E 1987). These types of studies could be applied to Chi Gong and spiritual healing as well.

This new model of an interactional universe mediated by our right temporal lobes explains more data than previous models. It has specific areas which can be proven or disproven by reproducible experiments. I predict that even if this proposed model ultimately does not withstand the test of time, a new understanding of human consciousness will result in investigating it.

Melvin Morse M.D. (melvinmorse.com) is associate professor of pediatrics at the University of Washington, Seattle, and author of a number of books and papers on near-death experiences.

References

Ader R, Felten DL, Cohen N (eds) *Psychoneuroimmunology*. Academic Press 1991 Part IV Psychosocial Factors, Stress, Disease, and Immunity. (pg 847-931)

Barret EAM, Doyle MB, Malinski VM et al: *The relationship among the experience of dying, the experience of paranormal events, and creativity in adults*. In Barrett EAM (ed) *Visions of Rogers science based nursing*. National League for Nursing Publication No 15-2285 New York 1990.

Becker RO: *The Body Electric: Electromagnetism and the Foundation of Life*. Quill (William Morrow) New York 1985

Becker RO: *Cross Currents: The Perils of Electropollution, The Promise of Electromedicine*. 1990 Jeremy Tarcher Los Angeles

Benson H, Stuart EM: *The Wellness Book*. Simon and Schuster New York, 1992

Bohm D, Hiley B: *The Causal Interpretation of Quantum theory*. New York, Bantam Books 1987 (In Science, Order and Creativity, by Bohm D, and Peat D)

Capra F: *The Tao of Physics*. Bantam 1976

Carr C: *Death and Near Death: A comparison of Tibetan and Euro-American experiences*. J Transpersonal Psychol 1993; 25:59-110

Cushing: *Brain* 1921-1922 xlv p341

Cushing: *Tr. Am Neurol A.* 1921 p 374

Davie P: *The Mind of God: The Scientific Basis of a Rational World*. Touchstone, New

York 1992

de Duve, C: *Vital Dust: Life as a Cosmic Imperative*. Basic Books 1995

Devinsky O, Feldman E, Burrowes K: *Autoscopic phenomena with seizures*. Arch Neurol 1989 46:1080-1088

Dewhurst K, Beard AW: *Sudden religious conversions in temporal lobe epilepsy*. Br J Psychiatry 1970; 117: 497-507

Dunne, B and Jahn, R: *Margins of Reality*. Harcourt Brace, 1987

Gleick J: *Chaos: Making a New Science*. Penguin Books 1987

Gloor P, Olivier A, Quesney LF et al: *The Role of the Limbic System in Experimental Phenomena of Temporal Lobe Epilepsy*. Ann Neurol 1982 23:129-44

Hameroff SR: *Fundamentality: Is the conscious Mind Subtly Linked to a basic level of the Universe?* Trends in Cognitive Sciences 2(4) 119-127 1998

Hameroff SR: *Quantum computing in microtubules: an intraneural correlate of consciousness?* Cognitive Studies: Bulletin of the Japanese Cognitive Science Society. 4(3) 67- 92

Hansen GP: *CSICOP and the Skeptics: An Overview*. J Am Soc Psych Res vol 86 1/92 pp 19-63 Haraldsson E, Gissurarson LR: *Does geomagnetic activity affect extrasensory perception?* Personality and Individual Differences 8:745-47 1987

Hennsley JA, Christenson PJ, Hardoin RA, et al: *Premonitions of sudden infant death syndrome: a retrospective case control study*. Pediatr Pulmonol 1993; 16:393 (abstract)

Henschen: *Klinische und anatomische Beitrage zur Pathologie des Gehirns*, Almquist and Wiksells, Upsala, 1890 i-vii Arch f. Psychiat. 1925 lxxv p630

Hirshberg C, Barasch MI: *Remarkable Recovery*. New York Riverhead Books 1995

Hufford DJ: *The Terror That Comes in the Night*. University of Pennsylvania Press 1982

Jackson and Beevor: *Brain 1889-90* xii p346

Jansen K: *Neuroscience, ketamine, and the near death experience*. in The Near Death Reader, ed Bailey LW, Yates J. New York, Rutledge 1996 265-282

Kaku, M: *Hyperspace*. Plenum Press, New York 1977

Kelleher C: *Retrotransposons as Engines of Human Bodily Transformation*. J Sci Ex(accepted for publication)

Kennedy: *Arch Int Med* 1911 viii p317.

Kirschvink, Kobayashi-Kirschvink, Woolford: *Magnetite biomineralization in the human brain*. Proceedings of the National Academy of Science. 89 7683-7687. 1992

Makarec K, Persinger MA: *Electroencephalographic validation of a temporal lobe signs inventory in a normal population*. J Research in Personality 1990 24 323-337

McMoneagle J: *Mind Trek: Exploring consciousness, Time, and Space through Remote Viewing*. Hampton Roads, Charlottesville, VA. 1993

Mendez MP, Engebret B, Doss R: *The relationship of epileptic auras and psychological attributes*. J Neuropsychiatry Clin Neurosci 1996 8:287-292

Moody, R: *Life After Life*. Mockingbird Press 1975.

Morgan H: *Doestoyevsky's epilepsy: A case report and comparison*. Surg Neurol 1990 33:413- 416

Morse ML, Castillo P, Venecia D: *Childhood Near Death Experiences*. Am J dis Child 1986 140:110-4

Morse ML, Neppe V: *Near Death Experiences* (letter) Lancet 1991 337-386

Morse ML, Venecia D, Milstein J: *Near Death Experiences: A Neurophysiological Explanatory Model*. J Near Death Studies, 1989 Fall 8(1)45-53.

Morse ML, Perry P: *Closer to the Light*. Villard Books 1990

Morse ML, Perry P: *Transformed by the Light*. Villard Books 1992

Morse ML: *Near Death Experiences and Death Related Visions: Implications for the Clinician*. Current Problems in Pediatrics. Feb 1994 55-83 Mullin S, Penfield W: *Illusions of comparative Interpretation and Emotion*. Archives of Neurology and Psych vol 81 March 1959 269-285

Nelson GK: *Preliminary study of the EEG of mediums*. Parapsychologica 1970 4:30-45

Neppe VM: *PSI, genetics, and the temporal lobes*. Parapsychological Journal of South Africa. 1981 2: 35-55 Neppe VM: *The Temporal Lobe and Anomalous Experience*. Parapsychological Journal of South Africa 1984 5:1 36-47

Palmini A, Gloor P: *The Localizing value of auras in partial seizures*. Neurology 1992 42:801- 806

Penfield W, Rasmussen T: *The Cerebral Cortex of Man: A Clinical Study of Localization of Function*. New York MacMillan 1950, 162-181

Penfield W: *The role of the temporal cortex in certain psychical phenomena*. J Ment Sci 1955 101:451-65

Persinger M: *The Neuropsychological Bases of God Beliefs*. Praeger New York 1987

Persinger MA, Makarec K: *Complex partial epileptic signs as a continuum from normal to epileptics: normative data and clinical populations*. J Clin Psychol 1993 49: 33-45

Osis K, Haraldsson E: *At The Hour of Death*. Avon Books, New York 1977

Peat D: *Synchronicity: The Bridge Between Mind and Matter*. Bantam Books 1987

Sagan C: *The Demon Haunted World: Science as a Candle in the Darkness*. Ballantine Books, New York.

Strieber W: *Communion*. Beech Tree Books 1987

Saver JL, Rabin J: *The Neural Substrates of Religious Experience*. Journal of Neuropsychiatry, 1997 9:498-510

Schrödinger E: *What is Life*. Cambridge University Press 1994

Sheldrake R: *A New Science of Life*. Park Street Press 1987

Targ R, Kutra J: *Miracles of Mind: Exploring Nonlocal Consciousness and Spiritual Healing*. New World Library, Novato, California. 1998

Tiller W: *Science and Human Transformation* . Pavior 1997

Tippler FJ: *The Physics of Immortality*. Anchor books 1994

Utts J: *An assessment of the evidence for psychic functioning* . JSE 10:3-30

Whinnery JE, Whinnery AM: *Acceleration Induced Loss of Consciousness*. Arch Neurol
1990 47:764-766

Williams D: *The structure of emotions reflecting in epileptic experiences*. Brain 1956
79:29- 67

Zukav G: *The Dancing Wu Li Masters* . Bantam 1979